

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

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| In the Matter of: |) | |
| |) | |
| Amendment of Part 27 of the Commission's |) | WT Docket No. 07-293 |
| Rules to Govern the Operation of Wireless |) | |
| Communications Services in the 2.3 GHz |) | |
| Band |) | |
| |) | |
| Establishment of Rules and Policies for the |) | IB Docket No. 95-91 |
| Digital Audio Radio Satellite Service in the |) | GEN Docket No. 90-357 |
| 2310-2360 MHz Frequency Band |) | RM No. 8610 |

**SIRIUS XM RADIO INC.
REPLY TO OPPOSITIONS OF THE WCS COALITION AND AT&T INC.**

Sirius XM Radio Inc. ("Sirius XM"), pursuant to Section 1.429(g) of the Commission's rules, submits this Reply to the Oppositions filed by the WCS Coalition and AT&T in the above-captioned proceedings.¹ These oppositions suggest some areas for agreement with Sirius XM, but also rely upon recycled arguments or simply misconstrue Sirius XM's positions. Sirius XM herein responds to the arguments made by the WCS licensees against Sirius XM's Petition for Partial Reconsideration and Clarification² and urges the Commission to revise the WCS technical and coordination rules as necessary to protect more than 35 million satellite radio listeners.

¹ See Opposition of the WCS Coalition to Petition of Sirius XM for Partial Reconsideration and Clarification, WT Docket No. 07-293, (filed Oct. 18, 2010) ("WCS Coalition Opposition"); Opposition of AT&T Inc. to Petition for Partial Reconsideration and Clarification of Sirius XM Radio Inc.; Petition for Reconsideration of Green Flag Wireless, LLC et al.; and Petition for Clarification or Partial Reconsideration of ARRL, WT Docket No. 07-293, (filed Oct. 18, 2010) ("AT&T Opposition"). See also Amendment of Part 27 of the Commission's Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band, WT Docket No. 07-293, *Report and Order*, Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band, IB Docket No. 95-91, *Second Report and Order*, 25 FCC Rcd 11710 (2010) ("*Order*").

² See Petition For Partial Reconsideration and Clarification of Sirius XM Radio Inc., WT Docket No. 07-293, (filed Sept. 1, 2010) ("Sirius XM Petition").

I. THE COMMISSION SHOULD RECONSIDER THE *ORDER*'S OOB LIMITS.

The WCS Coalition opposes Sirius XM's request to reconsider the new out of band emissions ("OOB") limits for WCS mobile and portable stations, yet it still has not refuted the inconsistencies between these limits and the technical evidence in the record. The FCC should revisit the *Order*'s OOB limits, based on the ample evidence that those limits will be insufficient to protect satellite radio consumers and that WCS licensees can easily and affordably meet stricter OOB limits through increased WCS mobile and fixed device filtering.³

The WCS Coalition again attempts to discount the results of the Ashburn demonstrations, by distorting the muting that was observed there as a "worst case" scenario "hardly [rising] to the level of harmful interference."⁴ To the contrary, the muting observed at Ashburn would be closer to the norm than the exception simply because the Ashburn demonstrations actually depicted a best-case scenario for satellite radio reception. In an area receiving some of the strongest satellite signals receivable in North America, the Ashburn tests demonstrated only the effect of a single WCS mobile/base station pairing. In a real-world deployment, such as on a crowded road, any number of WCS mobile units may be transmitting simultaneously in proximity to the satellite radio receiver, in an area with less robust satellite coverage.⁵ Moreover, as AT&T has explained,⁶ mobile usage is increasingly emphasizing higher-uplink applications. Thus, this single WCS Coalition demonstration confirms the tests that Sirius XM conducted at

³ See, e.g., Sirius XM Petition at 11-13.

⁴ WCS Coalition Opposition at 5 (*citing* Order at 29 ¶ 62).

⁵ The real-world scenario is best depicted in the road test video that Sirius XM filed in May 2010, showing actual interference to satellite radio receivers caused by WCS devices operating pursuant to rules the Commission had proposed. See Letter from Robert L. Pettit, Counsel to Sirius XM, to Marlene H. Dortch, FCC, WT Docket No. 07-293, at 1 (filed May 6, 2010).

⁶ Petition for Partial Reconsideration of AT&T Inc., WT Docket No. 07-293, at 19-20 (filed Sept. 1, 2010).

Ashburn and accurately depicts the interference a WCS mobile broadband network will have on satellite radio customers when high bandwidth uplink applications become more prevalent.

The WCS Coalition next complains that Sirius XM has not sufficiently established that filters capable of achieving stricter OOB limits would be of appropriate size and cost and that Sirius XM has not answered every question the Coalition may pose related to the technical operations of those filters. The WCS Coalition is operating under the mistaken premise that it is Sirius XM's responsibility – rather than the obligation of WCS licensees – to demonstrate the viability of this filtering and to develop filters that will work for this purpose. Contrasting with the effort and expense that Sirius XM has undertaken to research WCS filters,⁷ the WCS licensees have never seriously considered the feasibility of developing filters that would provide greater attenuation of OOB and offer better protection to satellite radio consumers. The Commission should not accept the WCS position that better filters are not feasible simply because the WCS Coalition declines to explore the option.

Further, the WCS Coalition does not justify its inconsistency in accepting OOB attenuation of $70 + 10 \log (P)$ dB to protect the aeronautical telemetry band while claiming that such protection is unreasonable for satellite radio consumers. If WCS operations can exist with a more restrictive OOB limit at one end of the spectrum, it can work on the other as well. The Commission should reexamine this imbalance and better protect satellite radio consumers before allowing interfering WCS devices to be deployed.

⁷ In response to WCS licensees' concerns that satellite radio terrestrial repeaters would cause intermodulation in WCS fixed and base station receivers, Sirius and XM jointly funded the development of band-pass filters to protect the WCS installations. *See* White Paper: Interference to the SDARS Service from WCS Transmitters at 32, *attached to* Letter from Carl R. Frank, Counsel to Sirius Satellite Radio Inc., to Marlene H. Dortch, FCC, WT Docket No. 05-256, IB Docket No. 95-91 (filed Mar. 29, 2006).

II. THE RECORD DOES NOT SUPPORT THE ADOPTED DUTY CYCLE LIMITS.

The WCS Coalition opposes Sirius XM's request that the Commission decrease the duty cycle limits placed on WCS transmitters, but it cannot justify the limits adopted in the *Order*. The WCS Coalition begins with the surprising assertion that the Commission need not even provide evidentiary support for its newly adopted technical rules,⁸ citing to the its 2003 decision on sharing between digital broadcast satellite ("DBS") and terrestrial multichannel video distribution and data services ("MVDDS") licensees.⁹ However based on the record in that proceeding, the Commission found that the increase in service outages to DBS consumers "would be generally unnoticed by the DBS subscriber"¹⁰ while here, the evidence points to the opposite conclusion. The Ashburn demonstrations showed that duty cycles even lower than those adopted in the *Order* inadequately protect satellite radio consumers from disruptive muting. Neither the *DBS/MVDDS Sharing Fourth MO&O* nor any other precedent justifies ignoring record evidence showing that new rules will result in harmful interference.¹¹

⁸ WCS Coalition Opposition at 6-7.

⁹ See *Id.* at 7 (citing Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range, *Fourth Memorandum Opinion and Order*, 18 FCC Rcd 8428, 8460 (2003) *affirmed sub nom. Northpoint Technology Ltd. V. FCC*, 414 F.3d 61 (D.C. Cir. 2005) ("*DBS/MVDDS Sharing Fourth MO&O*").

¹⁰ Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range, *First Report and Order and Further Notice of Proposed Rulemaking*, 16 FCC Rcd 4096, 4177 ¶ 213 (2000).

¹¹ See 5 U.S.C. § 706 (a reviewing court will set aside agency action found to be arbitrary and capricious or not supported by substantial evidence); *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) ("the agency must examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made"); *Universal Camera Corp. v. N.L.R.B.*, 340 U.S. 474, 488 (1951) ("The substantiality of evidence must take into account whatever in the record fairly detracts from its weight.").

The WCS Coalition also discounts Sirius XM's conclusions from the Ashburn demonstrations by claiming the Coalition actually demonstrated a 37 percent duty cycle, not a 35 percent duty cycle as initially reported.¹² This argument proves more than Coalition intends, since it highlights the fact that the Coalition itself is still learning what it actually demonstrated in Ashburn, and its contributions are suspect. Without affording access to the actual logs and test data from Ashburn, it is impossible for Sirius XM, the Commission, or anyone to know what was tested or the actual impact to satellite radio subscribers. The FCC should not adopt final rules in this proceeding based upon assertions that are unsupported by transparent data, especially when those assertions conflict with reams of other, more reliable evidence in the record.¹³

Similar to the WCS Coalition's comments opposing additional filtering, its complaints about vendor support for a lower duty cycle suggest an entitlement to having their service rules crafted based upon the cheapest commercially available technology, with minimal regard for the interference that technology may create to the adjacent band. Licensees have no right to ready-made technology and they are frequently required to innovate and develop new solutions needed to coexist with other spectrum users. Sirius XM invested billions of dollars to design its satellite radio systems, accepting design constraints and associated costs that were necessary due to the Commission's technical standards existing at the time. WCS licensees' continued opposition to lower duty cycle requirements and additional OOB filtering also place them at odds with the

¹² WCS Coalition Opposition at 7-8.

¹³ In a reply to Sirius XM, AT&T claims that the record supports increasing the WCS mobile transmit duty cycle to 43.333 percent. *See* Reply to Oppositions of Sirius XM Radio Inc., Aerospace and Flight Test Radio Coordinating Council, and the Boeing Company to the Petition for Partial Reconsideration of AT&T Inc., WT Docket No. 07-293, at 7 (filed Nov. 1, 2010) ("AT&T Reply"). Sirius XM disagrees. No test data from Ashburn show what happens when WCS devices operate at this higher duty cycle. The only data AT&T cites to support its request shows muting interference to a satellite radio receiver separated by 24 feet from the WCS mobile transmitter, which does not demonstrate compatibility between the two services. *Id.* at 6 n. 30.

Order's directive that WCS licensees maintain “sufficient operational flexibility in their network design to implement one or more technical solutions to remedy harmful interference.”¹⁴

III. THE COMMISSION SHOULD TREAT FIXED CPE CONSISTENTLY WITH OTHER WCS TRANSMITTERS.

In opposing Sirius XM's proposed changes to the WCS fixed CPE technical rules, the WCS Coalition and AT&T misinterpret Sirius XM's Petition as an attack on the viability of WCS fixed broadband applications. Sirius XM believes that fixed broadband services could be an excellent use for the WCS spectrum, provided sufficient safeguards are in place. Fixed WCS installations present fewer coordination challenges and can address the country's pressing need for expanded residential broadband and wireless backhaul infrastructure.¹⁵ However, as Sirius XM and the WCS Coalition agree, the fixed CPE rules require further definition.

The WCS Coalition correctly points out that Sirius XM has previously supported a $75 + 10 \log(P)$ dB OOB attenuation factor for fixed CPE.¹⁶ However, it is disingenuous for the Coalition to assert that Sirius XM has previously assented to the CPE rules that the Commission ultimately adopted, without a guard band. Sirius' 2006 Petition for Rulemaking clearly coupled this relaxed OOB limit with ground level emission limits on fixed station emissions measured more than one meter from the CPE transmitter,¹⁷ which would provide additional protection for satellite radio receivers and might reduce the need for a guard band.

Nevertheless, Sirius XM's main concern with respect to the new fixed CPE rules is the potential for interference from the new class of devices operating at 2 W or less average EIRP,

¹⁴ *Order, Appendix B, § 27.72(c).*

¹⁵ *See Comments of Sirius XM Radio Inc., WT Docket No. 10-153 at 3-5 (filed Oct. 25, 2010).*

¹⁶ *WCS Coalition Opposition at 10.*

¹⁷ *See Sirius Satellite Radio Inc. Petition for Rulemaking, IB Docket No. 95-91, App. B at 1 (filed Oct. 17, 2006).*

with the same stepped OOB limits applied to mobile transmitters, and without a guard band in the C and D blocks. Regardless of the potential for increased path loss for indoor CPE, as the WCS Coalition claims, no record evidence shows the effect this will have on the potential for harmful interference to satellite radio receivers. The FCC should not allow the deployment and operation of these devices without further analysis.¹⁸

AT&T's assertion that Sirius XM's proposed power spectral density ("PSD") limit for fixed CPE would effect a substantial reduction in permitted transmitter power for these devices¹⁹ is an apparent misunderstanding of Sirius XM's position created, in part, by a typographical error.²⁰ Sirius XM does not challenge the 20 W peak EIRP power limit for fixed CPE stations but believes that the fixed CPE rules should be drafted consistently with the rules for other classes of WCS stations. While the base and mobile PSD rules clearly require the power to be spread evenly by defining the maximum power "within any 5 megahertz of authorized bandwidth," the CPE rules are worded as a ratio (20 watts "per 5-megahertz") and could allow for the concentration of transmitter power in the spectrum closest to the satellite radio band. The FCC should reword the PSD limit contained in Section 27.50(a)(2) to read "the peak EIRP must not exceed 20 watts within any 5 megahertz of authorized bandwidth and must not exceed 4 watts within any 1 megahertz of authorized bandwidth."²¹

¹⁸ AT&T strains credulity in claiming that the lack of interference complaints resulting from existing WCS fixed deployment means there is no basis for concern, given that the WCS licensees have avoided system-wide deployment for the past 13 years and, even today, continue to seek deferral of their construction obligations. AT&T Reply at 9. In any event, the Commission should never rely solely on consumer complaints of interference when establishing technical standards for wireless services.

¹⁹ AT&T Opposition at 2-5.

²⁰ See Sirius XM Petition at 3 ("400 mW" should read "4 W").

²¹ Sirius XM Opposition to Petitions for Reconsideration, WT Docket No. 07-293, at 14 n.34 (filed Oct. 18, 2010). Sirius XM's Opposition at 14 n.34.

As reflected by the need for two *errata*, the lengthy delay before Federal Register publication, and multiple Petitions for Reconsideration, the newly adopted CPE portions of Section 27.50 require clarification. Sirius XM agrees with the WCS Coalition that, for example, the Commission should be more precise in distinguishing fixed CPE from fixed point-to-point WCS deployments.²² Although Sirius XM supports fixed uses of the WCS spectrum, it has concerns that some of the new technical rules are inadequate to protect satellite radio consumers.

IV. THE WCS COALITION HAS ACKNOWLEDGED THE FEASIBILITY OF CONDUCTING GROUND BASED EMISSION MEASUREMENTS

The WCS Coalition passionately opposed Sirius XM's reconsideration proposals regarding ground-based PFD measurements to protect satellite radio consumers,²³ yet the Coalition has itself proposed to measure emissions at ground level as a means of facilitating coordination of WCS base stations and Sirius XM terrestrial repeaters.²⁴ Having thus acknowledged the feasibility of conducting these measurements and their relevance to determining the potential for interference, the WCS Coalition should not now complain about "the practical difficulties associated with any ground-based emission limit."²⁵

²² Petition of the WCS Coalition for Partial Reconsideration, WT Docket No. 07-293, at 13-14 (filed Sept. 1, 2010) ("WCS Coalition Petition").

²³ See WCS Coalition Opposition at 14-18. The Coalition also questions whether Sirius XM specified with particularity its ground level emissions limit proposal, as required by Section 1.429(c) of the FCC's rules. Sirius XM's Petition clearly complied with the rules by citing to the specific proposals contained in the 2006 Petition for Rulemaking filed by Sirius Satellite Radio. Any such accusations are particularly suspect in light of the Coalition's own failure to observe procedural formalities in the rules. See 47 C.F.R. § 1.49(a).

²⁴ WCS Coalition Petition at 20.

²⁵ WCS Coalition Opposition at 15.

V. SIRIUS XM ACCEPTS THE WCS COALITION'S COMPROMISE COORDINATION PROPOSALS

Sirius XM is encouraged by the WCS Coalition's apparent willingness to embrace reasonable and equitable coordination procedures. After several pages of rhetoric, the WCS Coalition acknowledges that the FCC's definition of "potentially affected licensees" is overly broad and proposes to substitute a 25 km geographic distance from a Sirius XM terrestrial repeater.²⁶ Sirius XM urges the Commission to adopt this proposal.²⁷

However, Sirius XM disagrees with the WCS Coalition's assertion that the FCC should not modify the "potentially affected licensees" definition with respect to the notification requirement of Sections 25.144(e)(3) and 25.263(b).²⁸ The Petition was clear that Sirius XM was challenging the definition itself, rather than any specific technical or coordination rule using the term.²⁹ To the extent the Commission uses this same term in multiple rules, the revised definition should apply to each instance.

Sirius XM also supports the WCS Coalition's call for mutual coordination obligations, which should create a real opportunity to mitigate harmful interference. Sirius XM has long endeavored to engage the WCS licensees in substantive notification and coordination efforts. Along these lines, Sirius XM has gone beyond the requirements of its STAs to provide WCS licensees with advance notification of its repeater construction in markets where substantial

²⁶ See WCS Coalition Opposition at 24.

²⁷ Sirius XM also agrees with the WCS Coalition's compromise position that exempting very low power repeaters operating at less than 2 W EIRP from notification requirements is acceptable if the Commission makes a parallel modification to Section 27.72(b) and (c) to exempt WCS mobile base stations operating at less than 2 W EIRP.

²⁸ See *id.* at 22 n.77.

²⁹ See Sirius XM Petition at 21 ("The Commission Should Redefine What Constitutes a 'Potentially Affected' WCS Licensee") and 22 ("The Commission's definition of a 'potentially affected' WCS licensee is grossly overbroad.").

service notifications indicate that WCS operations have begun. On the other hand, and contrary to the Commission's express directive, Sirius XM has never received notification or a schedule of station deployment from a WCS licensee,³⁰ even though such deployments have obviously occurred. Given this history, Sirius XM would find mutual information sharing and coordination obligations to be a welcome improvement.

VI. CONCLUSION.

Sirius XM shares the FCC's goal of striking an appropriate balance that would enable important broadband deployments in the WCS spectrum while also protecting satellite radio consumers from harmful interference. As Sirius XM discussed in its Petition for Reconsideration, the *Order* failed to strike this balance on several counts. The Commission should therefore grant Sirius XM's Petition for Reconsideration of the *Order*, and adopt revised technical and coordination rules based upon the principles explained in Sirius XM's Petition and the compromise positions discussed above.

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Respectfully submitted,

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³⁰ See, e.g., Sirius Satellite Radio Inc. Application for Special Temporary Authority to Operate Satellite Digital Audio Radio Service Complementary Terrestrial Repeaters, *Order and Authorization*, 16 FCC Rcd 16773, 16778 ¶ 14 (Int'l Bur. 2001) ("To facilitate this coordination, we expect WCS licensees to provide a schedule or as much advance notice as possible of when their stations are to be placed in operation.").

CERTIFICATE OF SERVICE

I hereby certify that a true copy of the foregoing “Reply to Oppositions” was deposited in the United States mail, first class postage prepaid, on this 2nd day of November, 2010, addressed to the following:

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